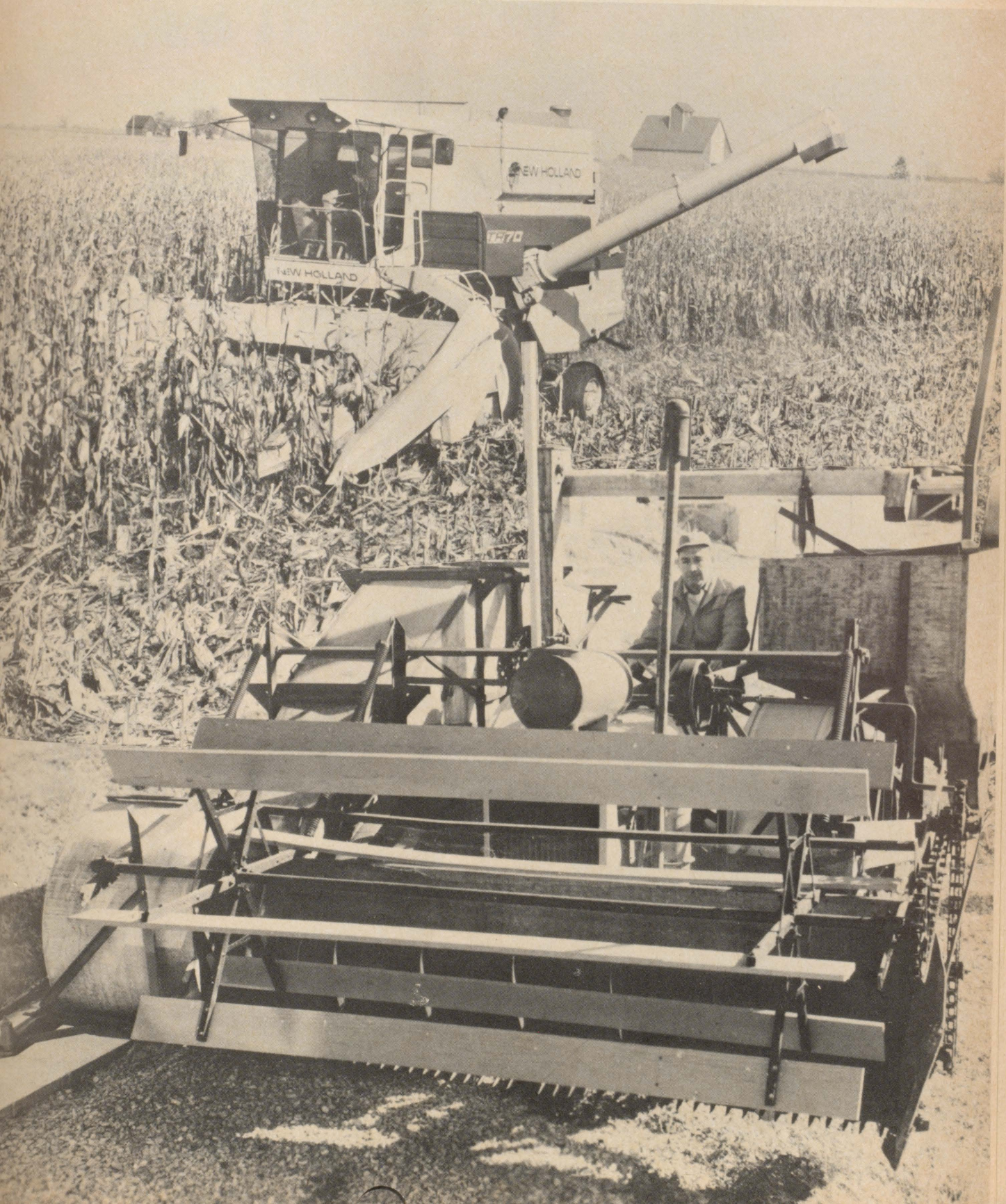


The Macdonald Journal

MAY 1982





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In This Issue

Cover: How combines have changed! Superimposed on a photo featuring a modern combine is a photo of a 1925 Gleaner combine. For a guide to what is new in combines, see page 3.

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Journal Jottings

Combining time at the Macdonald campus last fall found me — and my camera — in the fields north of the St. Lawrence Canada Highway. In order to reduce costs Farm Director Rudi Rutenbach uses a custom combine, and this particular one had rumbled from St-Télesphore for a few weeks work (see photo at left). I would say days and nights because this machine didn't stop in darkness. Headlights on, it continued up and down the rows until two or two each morning. It took five days and two nights to combine the grain corn requirements for the Farm which, according to Mr. Rutenbach, was good time. If I remember correctly, the weather also cooperated. How does one choose such a big, expensive

machine? I think the key word is carefully and the key person to help you make a decision by weighing the pros and cons of the various makes and models is Professor Eric Norris of the Department of Agricultural Engineering. In preparing for his cover story Professor Norris told me that he has also got enough material ready for a fall lecture — and this year's classes have only just recently ended!

Before reading this and other features in the magazine may I ask that you first read the Letter on the Editorial page from L.E. Lloyd, Dean of the Faculty of Agriculture. As his Letter contains a message of importance to all our readers, I do urge you not only to read it but also, as

he asks, to lend us your support and send us your comments in the months to come.

Hazel M. Clarke

Editorial

Dear Journal Reader:

Publication of the Macdonald Journal has been one of the principal activities of the Extension Program on this campus for many years. However, just like most individuals, families, or businesses, the effects of inflation, recession, etc., have forced us to re-examine our position and decide just what our future role in the community should be.

The Dean of the Faculty of Agriculture on the Macdonald Campus has available a certain amount of funding which can be used annually in a discretionary manner. These funds do not come from the University; their origin is with endowments established years ago by our chief benefactors — the Stewart family. Because there has been a progressive increase in the proportion of these discretionary funds allocated to the Extension Program, the Faculty of Agriculture and the School of Food Science recently concluded an examination of our future interaction with the community we serve.

One conclusion reached was that our target community should include the following: the rural

population of Quebec, the business establishments related to agriculture and food (agribusiness), our alumni, and the general public. In order to describe our activities that will be directed towards these four target groups, we have adopted the name "Macdonald Community Liaison Program." Within the Program, four activity areas have been identified: rural extension services, general community relations, student recruitment, and publications.

In the area of publications, we are about to make some significant changes in the Macdonald Journal — some of these are for financial reasons, others in order to ensure that we relate to each of our four target groups in the community.

At the present time, the Macdonald Journal is issued 10 times per year with a total of 20 pages per issue. In the summer of 1982, we plan to commence quarterly issues of the Journal with a total of 40 pages per issue — in short, we shall have Summer, Fall, Winter, and Spring issues from now on.

Each issue will focus on one of the four target groups, while at the same time providing items of interest to the other three. For example, in the Summer issue, about 40 per cent of the material will be of special interest to our alumni, with the remaining 60 per cent being divided equally among the other groups, i.e., agribusiness, rural population, and general public. Forty per cent of the Fall issue will be devoted to agribusiness, the Winter issue will concentrate its attention on the rural population, with the Spring issue primarily focused on the general public.

To each of our on-going subscribers, we can only hope that you will bear with us during these changes in both the format of the Journal and the number of issues you will be receiving. It is our sincere hope that the new Macdonald Journal will provide items of interest to a wider segment of the community, and that you, in the long run, will be able to tell us that the changes were worth-while. May we continue to have your support as we attempt to adapt to changing times?

L.E. Lloyd
Dean

BUYING A COMBINE CONVENTIONAL OR ROTARY?

Professor E. R. Norris
Department of Agricultural
Engineering

someone who harvests a lot of grain, the selection of a new combine is always an important and difficult decision. In the last few years this decision has been made even more difficult by the introduction of a new generation of combines utilizing what is called the "rotary" principle. This article is an attempt to summarize the important points to consider when faced with this decision.

A conventional combine, shown schematically in Figure 1, is the result of almost two centuries of evolutionary development from the threshing machine patented by Andrew Meikle in 1788. After being threshed or cut by the header of the machine, the crop material is conveyed through a threshing

cylinder whose axis is perpendicular to the direction of flow of the material. The high speed rotation of the cylinder carries the material in a path tangential to the surface of the cylinder constrained by the concave which partially encircles the cylinder. It is in this area and in this short period of time that the grain is removed from the rest of the plant material. The concave has openings in it which allow a large proportion of the grain to fall through it and be carried to the cleaning shoe. The rest of the material is directed from the rear of the cylinder, is decelerated and directed downward by the beater and is carried rearward on the oscillating straw walkers or straw rack. It is in this area that the remaining grain is separated from the straw and is then carried to the cleaning shoe. In the cleaning shoe, a combination of oscillatory motion and an upwardly directed air blast separates the

grain from the chaff and other extraneous material.

In the conventional tangential threshing cylinder and walker design increases in capacity can be achieved mainly by increases in width of the machine. In order to thresh more material, more usable cylinder area is needed, and the only practical way to achieve this is to make it wider. As the cylinder gets wider, so does the rest of the machine. Eventually the machine becomes so wide that special permits are required for transportation. Also, the production of wider and wider cylinders, walker cranks, and other components becomes quite expensive. The shaking forces involved with the oscillatory parts of the machine become greater as the machine becomes wider with a resulting tendency for lower reliability.

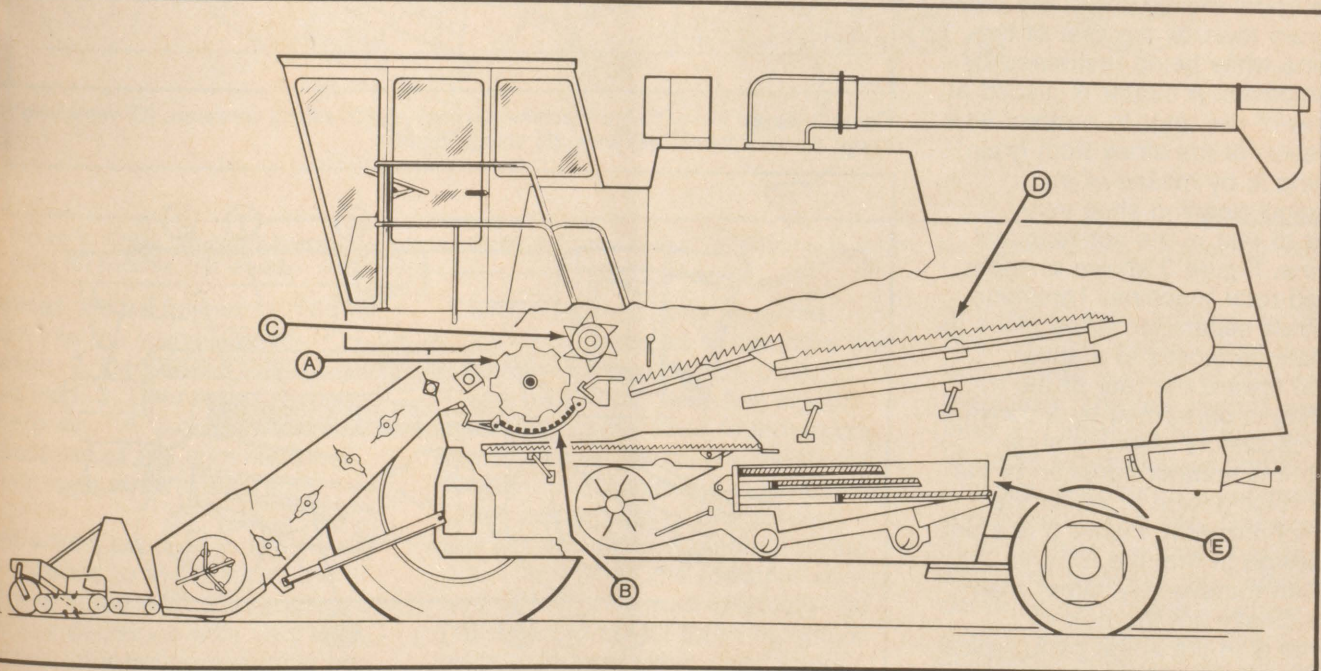


Figure 1. A typical conventional combine: (A) cylinder, (B) concave, (C) beater, (D) straw walkers, (E) shoe. This and the other diagrams used to illustrate the article are used courtesy PAMI Gleanings.

By the early 1970s, the size of the larger combine models produced in North America had reached the point where the manufacturers were looking for some new concept which would allow them to get greater capacity without increasing the size of the machine. Although it was by no means a new idea, the concept of a cylinder concave assembly in which the material moved in a spiral fashion started to look more attractive. This kind of idea had been suggested and tried in a variety of machines for as many years as the conventional machine existed but had never gained any popularity or commercial success. Thus it was that the last half of the 1970s saw the introduction of a number of axial threshing cylinder designs. All of these new machines are generally called rotary machines; however, this is a somewhat meaningless and redundant term because the threshing process in the conventional machine is also a rotary action.

Figures 2, 3, 4 and 5 show the variations of the new generation of combines. Figure 2 shows a dual rotor machine. Threshing occurs at the front of the rotors and the action of the straw walkers is replaced by the spiral movement of the straw and grain towards the rear of the machine while being restrained by the concaves. A beater is placed at the rear of the rotor to perform final separation of the straw from grain. Cleaning is by means of an oscillating cleaning shoe very similar to that in the conventional combine. Figure 3 shows a single inclined rotor machine. Threshing and straw separation takes place as the material moves in a spiral fashion toward the rear of the rotor. Cleaning is performed by a conventional oscillatory cleaning shoe. Figure 4 is another variation of the single rotor design in which the rotor is horizontal. Figure 5 is a unique design in that the rotor is mounted transversely rather than longitudinally but the flow of material is in the spiral path, typical of the new generation of rotary

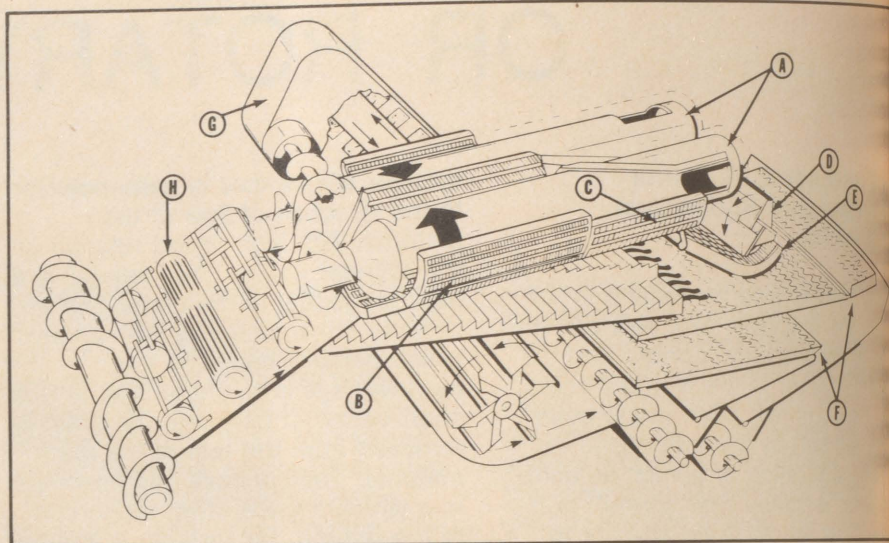


Figure 2. Dual rotor machine: (A) rotors, (B) threshing concave, (C) separating concave, (D) back beater, (E) beater grate, (F) shoe, (G) tailings return, (H) stone ejection roller.

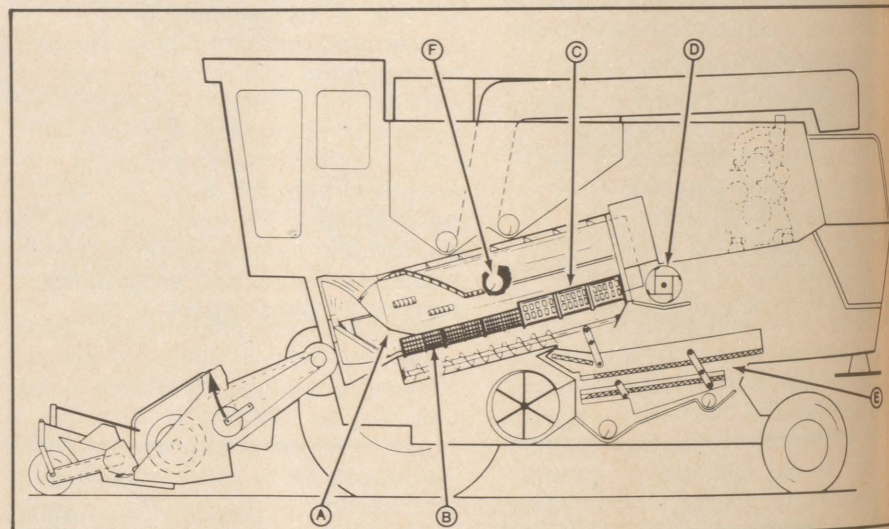


Figure 3. Single inclined rotor machine: (A) rotor, (B) threshing concaves, (C) separating concaves, (D) back beater, (E) shoe, (F) tailings return.

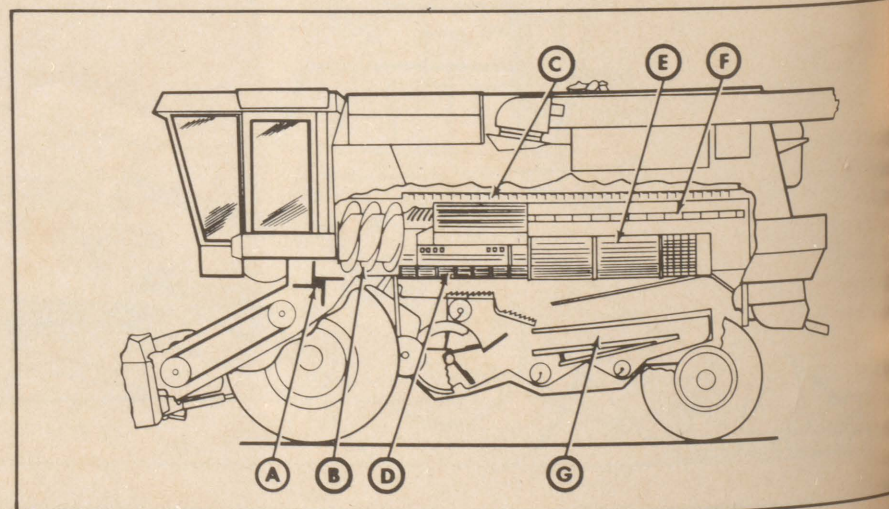


Figure 4. Single horizontal rotor machine: (A) inlet beater, (B) rotor, (C) guide vanes, (D) threshing concave, (E) separating concave, (F) separator sweeps, (G) shoe.

machines. Straw is ejected by the paddles at the end of the rotor and grain and chaff fall to an oscillatory cleaning shoe similar to other machines.

Although the impetus for development of this new generation of combines was mainly transportation and manufacturing problems associated with the production of larger conventional machines, certain other advantages of the new generation machines have been quoted by manufacturers. Some of the advantages claimed for these

generation of machine carries with it a significantly higher purchase price. At the present time, not all of the models of the new generation of combines have been subjected to testing by independent research organizations. Some very commendable research effort has been made by the Agricultural Engineering Department at Iowa State University and by the Prairie Agricultural Machinery Institute (PAMI). The tests at Iowa State have concentrated on the harvesting of corn and soybeans with the conventional machine, a dual rotor machine, and

In the case of soybeans the two rotary combines achieved significantly lower grain damage when compared to the conventional machine. These tests also indicated that improvements in the elevating and conveying mechanisms in all three machines were warranted since there was a considerable difference in damage levels of the grain emerging from the clean grain auger and the grain in the tank.

The Prairie Agricultural Machinery Institute has performed quite comprehensive field testing on a model

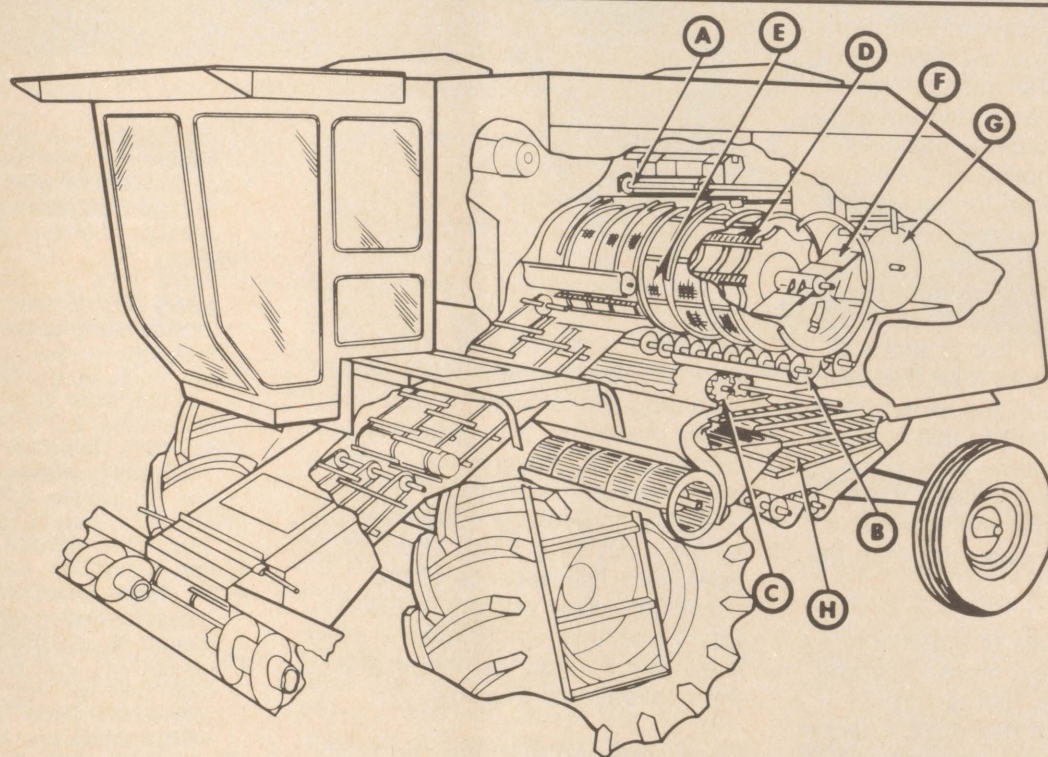


Figure 5. Single horizontal transverse rotor machine: (A) cage sweep, (B) distribution augers, (C) accelerator rolls, (D) rotor, (E) concave, (F) paddles, (G) impeller, (H) shoe.

machines are as follows: 1. Higher capacity in the same size of machine. 2. Decreased loss of grain in the field. 3. Decreased damage to the grain. 4. Longer machine because of the elimination of vibrating straw walkers.

When a new concept in machinery is introduced to the market, the farmer is faced with the problem of purchase decisions with very little objective information available on new equipment. The problem is even more difficult when the new

a single inclined rotor machine.

Data were collected to compare the harvest losses and grain damage in these two crops. Very few significant differences were found among the three machines. The single rotor machine did achieve a significantly lower percentage of broken corn kernels and foreign material in the grain tank when the moisture content of the grain was relatively low (18.6 per cent). All three combines were able to achieve satisfactory low levels of corn damage and separating threshing losses.

of the dual rotor machine, two models of the single inclined rotor machine, and a large number of conventional machines. The test reports are quite long and involved but they attempt to make a synopsis of pertinent practical points in the summary and conclusions. The very first comment in all of their synopses has to do with what they call the "functional performance" of the machine. This is simply a subjective, overall evaluation of the machine's operation under various crop conditions. The twin rotor machine achieved a

rating of excellent in dry crops. This is a rating which is equal to or better than most of the conventional machines. However, the rating of all of the rotary machines dropped to fair or good to fair in tough and damp crops. These ratings tend to reinforce the observations of some operators that the long residence time of the material in the threshing mechanism of the rotary machines does result in some problems.

The tests at PAMI concentrated on small grains, mainly wheat and barley, and considerable data were collected on grain losses from the machine. Almost without exception, the rotary machines exhibited lower losses than a conventional machine which they used as a reference. The dual rotor machine achieved the greatest reduction of grain losses as compared to the conventional machine but had some problems in feeding; unless the swath of material entering the rotor area was very well centred, there was a tendency for one rotor to process more of the material than the other. Stem orientation in the swath itself was quite important to this feeding problem. If the stems were not lying parallel to the swath itself, there was a tendency for more of the material to enter one rotor than the other.

A factor in the use of machinery which is becoming more important is the cost of the fuel to run machinery. PAMI has done a recent study on the power requirements to run the threshing and separating sections of various types of combines. To this date they have published data on their conventional reference machine, a model of the single inclined rotor machine, and one model of the single horizontal transverse rotor machine. They reported their results in terms of the amount of energy per ton of crop material processed in order to provide a fair comparison among machines of different capacities. These studies were made at a constant rate of grain loss of three per cent. In this study the conventional machine showed a significant advantage in energy usage; the single



Grain corn being emptied into a wagon on the Macdonald Farm.

inclined rotor machine used about 50 per cent more energy to do the same job; the single horizontal transverse rotor machine required over 100 per cent more energy to do the same amount of harvesting.

At the present time it is probably too soon to make any conclusions regarding the longevity of the new rotary machines. It is generally accepted that a conventional combine, given normal maintenance and operating in average conditions will be worn out after 2,000 hours of operation. The absence of the oscillating straw walkers in the rotary machine would make it seem likely that it could last longer than the conventional machine.

The conclusion that one can reach from all of this is that a purchase decision between a conventional and a rotary combine is not a simple one. The advantages of lower grain losses and lower grain damage must be weighed against the disadvantages of higher initial cost and higher energy costs. This is an important area of development of mechanization, and we can expect to see more research results in the near future.

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DHAS 15 YEARS LATER

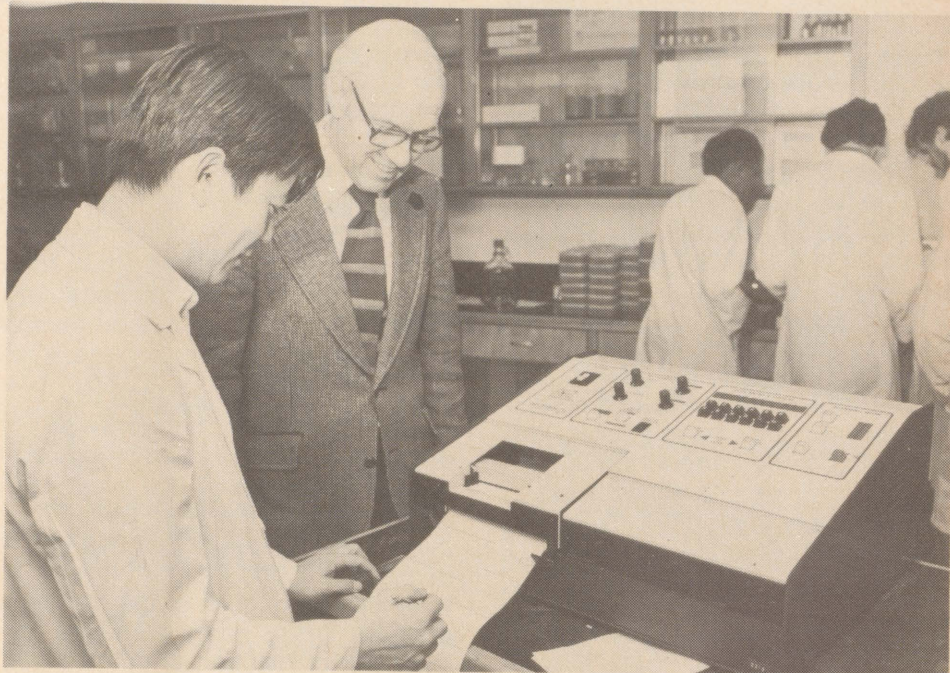
Dr. J. E. Moxley
Director, DHAS, and Professor,
Department of Animal Science

The Dairy Herd Analysis Service completed 15 years of service in May, 1981. The months between then and now have given time to reflect on those first years. Many changes have occurred since that first month when field supervisors ventured out, under Professor Peter Hamilton's guidance, to test the first 17 herds registered on the program. The milk analysis laboratory, with its Infra-red Milk Analyzer under Professor Herb MacRae's care, was located in a 9 x 10 foot hallway of the Macdonald College Poultry Building. The Computing Centre had already been in use for six months for teaching and research when these first 17 test day reports were processed and printed. The DHAS program was promoted at one cent per cow per test or \$3.60 per cow per year. Dairymen were receiving about \$1.00 per hundred pounds for their milk (\$8.60 per hectolitre).

Records show that 7,046 Quebec herds with 264,932 cows are enrolled on the DHAS program in May, 1981. An additional 595 herds from the Atlantic provinces with 25,440 cows were being processed by the Computing Centre.

For the year ending May 31, 106 field supervisors made 77,333 test day visits and 4,330 promotional visits in Quebec. The supervisors travelled 2.6 million kilometres to provide these services. During the year, there was a net increase of 12 Quebec herds on test. In 1980-81 six regional supervisors took care of the administrative and organizational functions in the field.

The milk analysis laboratory was moved around the campus and returned to the Poultry Building in 1976. In May, 1981, four Foss milk-



Professor Ng-Kwai-Hang, Research Director, Milk Composition Laboratory, left, and Professor Moxley discussing DHAS data.

o-scans were providing the fat and protein analysis and six Fossomatic units the somatic cell counts. The milk-o-scans can analyse up to 300 milk samples for fat and protein per hour. The Fossomatic units have a maximum speed of 180 analyses per hour. Two Fossomatics were added in April, 1981, to provide for the increased demand for somatic cell counts. During the year, the laboratory analysed over 2.5 million milk samples for fat and protein content. Somatic cell counts were completed for over one million samples of milk.

DHAS was a leader in the development of a central milk analysis laboratory in North America. The analyses equipment installed are of British and Danish origin. Computer oriented milk recording programs existed in the United States over 10 years before DHAS started. In contrast, the New England, New York, and Pennsylvania States visited our facilities before establishing their

new central laboratories and installing similar equipment.

In the year ending in May, 1981, the Computing Centre processed over three million cow test day records and produced approximately 85,000 herd test day reports. In addition, the Computing Centre produced a variety of summary reports for various governments, the artificial insemination unit, breed associations, farm publications, and extension personnel.

In our special dairy issue (February 1982 Journal) the Editorial writer, Richard Doyle indicated that Quebec has the second lowest level of milk recording participation in Canada. This is correct. In a presentation at the Dairy Cattle Symposium, at Quebec City in October, Richard Doyle provided information on the number of herds on milk recording in Canada in 1970 and 1980. Some of these figures are summarized in Table 1.

Table 1. Herds enrolled on milk recording in Canada.

		1970		Year	1980	Increase	
number	%	number	%				
Ontario		5,787		23.8	5,909	48.4	122
5 western provinces		7,718		25.4	8,282	47.1	564
Quebec		3,791		9.3	7,856	36.1	4,065
5 eastern provinces		4,333		9.8	8,742	36.9	4,409
CANADIAN TOTAL		12,051		16.2	(17,024)	41.2	(4,973)
DHAS SHARE		(1,749)			(7,002)		(5,253)

In this Table, the five western provinces include all provinces west of the Quebec border. The five eastern provinces include Quebec and the four Atlantic provinces where DHAS service has been available for the 10-year period. The per cent of herds on test is based on the number of herds shipping milk in each region. Quebec has been in a catch up period over the past 10 years. Compared to the other provinces, Quebec has shown a spectacular rate of increase in milk recording. If the current rate of growth continues, Quebec should not have very great difficulty in reaching the objective of 80 per cent participation by 1990.

The National Conference on Milk Recording in October, 1980, concluded that "The DHAS program included all the ingredients of an optimum service for Canada." The net increase of 5,253 herds on DHAS during the 1970 to 1980 period is a reflection of dairymen's response to the service.

The DHAS program in Quebec became a joint program of the Quebec Department of Agriculture and Macdonald College in 1970. Macdonald has continued to provide the service. The Ministry provides financial support and publicity for the program. An official recording service was initiated at the request of the Ministry in 1973. The official program was required to expand the base for proving the young sires entering the Quebec Artificial Insemination Unit. Under present rules, only lactation records completed under an official program can be used to prove sires in Canada. In Quebec this includes R.O.P. and official DHAS herds where the supervisor is present to weight and sample the milk on test day. This DHAS official program is beginning to pay off for Quebec dairymen. In

November, 1978, Quebec had only four of the top 25 Holstein production proven sires in its AI Unit. By November, 1981, Quebec had 16 or 64 per cent of the top 25 Holstein production proven sires in Canada. This is the result of a well planned young sire selection program and efficient use of milk recording resources.

Dairymen across the province have demonstrated their ability to use their DHAS reports to improve production. In 1974 only two herds had herd averages over 7,000 kilograms of milk per cow per year. By 1980 there were 113 herds that had exceeded the 7,000 kilogram level. With the introduction of the official program, DHAS herds were able to compete for recognition in the breed association awards. In 1981 the top herd for production in the Quebec Holstein-Friesian Association was a DHAS herd.

The DHAS program has been developed to provide the required services to dairy herds at all production levels. It is interesting to see the progress dairymen have achieved over a period of time. Table 2 compares the production and returns for herds on test in 1970 and

for the 727 herds still on test in 1980.

Inflation makes it difficult to compare the dollar returns; however, the increase of 930 kilograms of milk per cow reflects the progress these herds have made.

Each year, the production of herd on test for a different number of years on continuous test is published. The data in Table 3 come from the 1980 annual report.

Herds on DHAS for one full year in 1980 are well above the provincial average. Herds vary in the amount of progress they make each year. In Table 3 the herds on DHAS for 10 or more years produced 728 more kilograms of milk and had a \$180 better return of income over feed cost per cow than herds with only one complete year on test. This would translate into a \$7,200 advantage for a 40-cow herd.

The DHAS field, laboratory, and Computing Centre staff are proud of the progress that Quebec dairymen have made over the past 15 years. As Richard Doyle indicated in his February Editorial, there is need for continuing growth and improvement. Dairymen have used the production, feed, reproduction, and udder health (somatic cell counts) information in the way that has suited them best to improve performance. While limited research funds may be hampering progress, the plans are to continue to develop the service to better meet the needs of dairymen.

Table 2. Comparison of production and returns for herds on DHAS in 1970 and those still on test in 1980.

Year	1970	1980
Herd size (cows)	33.9	42.8
Milk production per cow (kg)	4,781	5,711
Meal fed per cow (kg)	1,507	1,946
Value of milk per cow (\$)	511	1,673
Income over feed cost (\$)	307	988

Table 3. Average production in 1980 for herds on DHAS for different numbers of years on test.

	Number of Years on Test		
	1	5	10 or over
No. of herds	712	682	727
Herd size (cows)	36.3	35.0	42.8
Milk production/cow (kg)	4,983	5,350	5,711
Fat (%)	3.56	3.59	3.63
Meal fed/cow (kg)	1,534	1,751	1,946
Milk value/cow (\$)	1,413	1,525	1,673
Income over feed cost (\$)	808	865	988

Drainage Improvement Work Needed in Canada

Professor R. S. Broughton
Department of Agricultural
Engineering

Drainage work is important for Canadian agriculture, not only for improving the productivity and versatility of soils in humid areas, but also for control of salinity in irrigated and seepage areas.

Drainage construction work has greatly increased the productivity and versatility of some of our soils. Less than one quarter of the drainage improvement work needed in Canadian soils has been done, and there is scope for many improvements in drainage planning, design, inspection, and construction methods.

Drainage work can be divided into the following categories:

- Provision of drainage outlets, ditches, pumps, and dikes;
- Surface drainage improvements;
- Surface drainage with perforated pipes, and
- Secondary drainage treatments, including mole drainage and subsoiling.

Provision of Drainage Outlets

Ditches

Capacity: The basic fluid mechanics of water flow in open channels, culverts, and bridges is well enough known for engineers to design channels with cross sections large enough to convey drainage waters and deep enough to provide outlets for subsurface drains. However, because of the high cost of digging ditches large enough to prevent local flooding, some short-term flooding of crop land has often been accepted rather than undertaking the more expensive construction.

Where there are very high value, sensitive vegetable crops are involved, a higher degree of protection against flooding will be justified. These decisions on ditch capacity and size of

dikes or pumps needed are mainly economic and no particular new research is needed.

(ii) Erosion Control: Experimentation with a range of erosion control techniques is very much needed to reduce the amount of sediment transported in drainage ditches and deposited downstream.

There is considerable evidence to indicate that as much as 80 per cent of the sediment transported in drainage ditches and watercourses comes from ditch bank and stream bank erosion and from sheet, rill, and gully erosion within a few metres of the edge of the channel banks.

There is need for seeding and sodding of ditch banks; growing of grass buffer strips adjacent to ditch banks (preventing farmers from cultivating right up to the edge of ditches); installing sodded grass chutes or stone riprap or galvanized steel chutes at places where surface drainage water is to be conveyed into ditches.

Ditches need to be dug with original cross sections which will be stable. This may involve use of parabolic shaped channels rather than trapezoidal channels; subsurface drain pipes may be installed parallel to ditches about 12 metres back from the edge of the banks to lower the local water table and reduce the tendency for the banks to slough off into the channels; grass mixtures and seeding and fertilizing techniques need to be selected and tried for obtaining early stands of grass on new ditch banks and adjacent shoulder areas to reduce erosion in the first two years after ditch construction. New designs for farm crossings — bridges, culverts, and fords — are needed to reduce erosion or flooding near lane crossings.

(iii) Effect of farmland drainage on downstream flood peaks: Considerable interest has developed recently among environmentalists, conservationists, and members of the public about the effects of farmland drainage on downstream flood peaks.

Research work on this topic is currently underway. Some work has been funded by the South Nation River Conservation Authority, the Ministry of the Environment, and the National Research Council in Canada. There is also some research on aspects of this topic underway in the United States.

Surface Drainage Improvements

Much drainage improvement can be achieved by surface grading and the construction of shallow field ditches. For greatest effectiveness, surface and subsurface drainage systems should be designed as an integral solution to drainage problems. Farmers will be disappointed if they expect subsurface drains to do an adequate job of draining depressional lands in which pondings 100 to 500 mm deep occur. Similarly, if only subsurface drainage ditches are installed, patches of soil will remain wet and soft, and tillage, planting, and harvesting operations will be hampered and the crops will be patchy and weedy.

If subsurface drains are installed near field surface drains, the shallow field drains will dry up quicker after surface runoff has ceased, and field work will be more efficient and crops more uniform.

The knowledge of this kind of drainage construction work exists, but not enough farmers, engineers, agronomists, or drainage contractors know how to effectively combine surface and subsurface drainage facilities.

Extension education and training of designers and constructors of land

improvement works is needed more than is basic research for this work.

3. Subsurface Drainage with Perforated Pipes

A. Planning

When subsurface drains were clay tiles installed by hand digging, the installation work took so much longer than the surveying and planning that there was no problem in getting the planning done well ahead of the installation work.

Now that the technique is to use plastic drain tubes and drain-laying ploughs pulled behind very large bulldozers, more time is required for the soil and topographic surveying and the plan preparation than for the installation work.

The pressure to speed up the preparation of drainage plans and to cut down the cost of planning work has caused the following situations in some areas of Canada:

- (i) Insufficient consideration of soil and topography in the design of the drainage systems;
- (ii) A few drains being installed on land which did not need subsurface drains;
- (iii) Some medium sandy soils being excessively drained because the subsurface drains were placed too deep;
- (iv) Drainage systems being installed without adequate plans showing where the pipes were actually installed;
- (v) Drainage systems being installed, i.e., connections not properly made, drain pipes with negative slopes for part of their length, inadequate cover, etc., because the machine operators do not understand their equipment, or do not take the care necessary to do a good job; and
- (vi) Drain tubes being installed without filter envelopes in soils where a filter envelope should be used.

Most of the above problems can be overcome through more training of drainage planning and construction personnel and with the input of more money to pay for better planning and supervision of drainage work.



Poor drainage. No subsurface drains. Pondings in cornfield after rainfall, June 22, 1981. Yields were severely reduced.



Cornfield with no subsurface drains as seen July 1, 1981. The corn has been killed in the low spots due to pondings after June rains.

Research is needed:

a. Ways of identifying the intensity of subsurface drainage required for heterogeneous soils.

b. Measurement of soil permeability (or saturated hydraulic conductivity) at times of the year when the water table is below the level at which permeability measurements are desired. Research work is underway on this topic. This work needs to be carried forth to achieve more efficient practical methods which can be used in the field or the laboratory for both horizontal and vertical hydraulic conductivities.

c. Prevention of excessive drainage of sandy soils in humid areas by use of subsurface drains at depths of 500 to 800 mm, or by use of water table control chambers on the mainlines of systems with deeper subsurface drains, as is currently being tried in Quebec.

d. Some convenient means are needed for soil surveyors and drainage planners to identify these sandy soils which need drainage but which might suffer from excessive drainage if subsurface

drains are placed deeper than 600 mm. Is there any better way than measuring the moisture release characteristics on cores taken from the suspect soils?

e. Interactive computer aided drafting holds a potential for greatly reducing the technician time required in the drafting of drainage plans and lists of materials required. Research and development effort on this topic is underway on the Macdonald Campus.

f. In the few soils where it will work, subsurface irrigation can be the least expensive form of irrigation. Some combined subsurface drainage and subirrigation systems are being established and monitored to find out operational problems and design criteria in order that this technique can be put to more effective use.

g. As more subsurface drains are installed for salinity control in western Canada, more monitoring of the drainage rates, salt contents of drainage water, water table depth, etc., is needed to provide performance data to help improve future designs.

h. Much can be learned from making detailed engineering and soils and crop investigations of farms and drainage systems where the farmer says the drainage system is not working well enough.

i. Should we be using evaporation ponds for drainage water in some saline areas in western Canada rather than returning saline drainage water to the river systems?

4. Secondary Drainage Treatments

A. Mole draining

Some mole drainage experiments should be undertaken in heavy clay soil areas where hydraulic conductivities are so low as to require subsurface drain laterals to be placed closer than 12 metres. There is much background knowledge and experience on mole drainage of heavy soils in England and New Zealand but very little in Canada. In England and New Zealand mole drainage has helped improve the productivity of some heavy clay soils at a much lower cost than could have been achieved by subsurface drain pipes alone. The successful mole drainage systems use subsurface drain laterals backfilled with gravel at spacings of about 60 metres as outlets for the mole which are pulled across and above the subsurface drains. Spacings between mole lines are as little as three metres.

B. Subsoiling or Deep Tillage

Subsoiling or deep tillage can do much to reduce soil density and increase permeability and thus help drainage and crop root growth. Some experiments are underway. Further research is needed on this topic to elucidate the extent of improvements which are possible and what the desirable soil conditions are for this kind of work. The energy requirements for subsoiling are very high. Much needs to be learned about the desirable depths of operation, timing of the work, and probable benefits before it can be recommended for particular soils.



Drainage after installation of an oil pipeline.

Macdonald Reports

TOOLS FOR TANZANIA

The Macdonald CUSO Committee (Canadian University Services Overseas) is organizing a collection of small hand tools for Tanzanian technical and vocational schools which are in desperate need of them for training tradesmen and for developing a local hand tool manufacturing industry. The committee is also looking for manually operated cream separators which will be used to produce clarified butter. Both the hand tools and the cream separators are in short supply or non-existent in Tanzania.

Small tools such as hammers, saws, planes, levels, drills, screwdrivers, etc. can be brought to the CUSO office at Macdonald in the Macdonald-Stewart Building or to the Ecological Agricultural Project office in the Barton Building (Barton 1-022, telephone 457-2000, local 190). If necessary, arrangements can be made to pick tools up within the Montreal region.

CUSO is an independent development agency involved in some 40 Third World countries in Africa, Asia, Latin America, and the Pacific. CUSO helps developing countries by providing financial support and technical assistance for specific projects.

CUSO Macdonald not only helps with on-campus recruitment of volunteers to be sent overseas, but also organizes development education activities at the Campus, an agricultural information service for CUSO workers in the field, and the tools collection project. The tool collection was set up in response to a specific request by a CUSO worker in Tanzania.

CANADA'S AGRICULTURAL SYSTEMS

The book "Canada's Agricultural Systems" by Roy Kennedy and Malcolm Churches of the Department of Agricultural Economics was first prepared in 1975 as a text for the course Economics of Canadian Agriculture offered in the first year curriculum of the Diploma in Agriculture and the B.Sc. (Agr) programs at Macdonald. Use of the text has broadened: it now serves as a basic reference in all marketing courses at Macdonald, as well as for courses in agribusiness offered under the Masters of Business Administration program of the Faculty of Management at McGill.

Outside the Department, previous editions of Canada's Agricultural Systems have received warm acceptance from students and professionals; the book which has been updated and revised is now in its 4th edition. New material has been added to many chapters as well as two completely new chapters dealing with oilseeds and other animals which complement those on wheat, coarse grain, horticulture, beef, dairy, pork, poultry meat, and egg systems. Other chapters include: "The Canadian Agriculture and Food System", "Agricultural Inputs System", "The Farm Sector", "The Processing, Distribution, and Retailing Sector", "Consumers", and "Marketing Boards in Canadian Agriculture". An extensive bibliography keyed to the chapters is also provided.

The objective of this book is to provide an integrated description of the Canadian Agriculture and Food System plus the system's crop and livestock commodity subsystems. An effort has been made in the new 4th edition to present in a clear, sequential, and complete manner a macroview of the entire system's operations and interactions as well as a comprehensive microview of the many economically important plant and animal commodities. This analysis is done through an examination of the following system components: inputs, production, processing, marketing (including pricing, wholesaling and retailing) consumers, international trade, and external agents including marketing boards. Supplemented by many graphs and tables, the book has 15 chapters and a total length of 415 pages.

The new 4th edition because of its wide scope, completeness, recent information, and readable format should make it useful to students and professionals interested in agricultural business, economics, or marketing. Companies and personnel dealing with the agricultural food system such as the agricultural inputs or processing sectors may likewise find the text a useful source of information.

One to nine copies of the book may be purchased, postage included, for \$20 each; orders of 10 or more may be purchased for \$15 plus postage. For more information or to place an order please write to the Department of Agricultural Economics, P.O. Box 224, Macdonald Campus of McGill University, Ste-Anne de Bellevue, Quebec, H9X 1C0.

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.



MILK RECORDING FOR GOOD HERD MANAGEMENT

In 1980 the 6,500 dairy herds registered in the Dairy Herd Analysis Service (PATLQ) produced an average of 5,400 kg of milk per cow compared to 3,200 for herds not registered in a milk recording program. This difference of 2,200 kg of milk per cow in favour of the controlled herds inevitably produces greater benefits to the dairy enterprise. Clément Plant, of the Animal Production Service of the Quebec Ministry of Agriculture, Fisheries, and Food, explains the how and the why of milk recording in this article.

About 40 per cent of Quebec milk producers are currently registered in one or the other of four milk recording programs as follows: ROP, DHAS-Regular, DHAS-Official, as well as DHAS-Postal.

They, indeed, consider that milk recordings are an essential management tool that they cannot do without as owners of dairy enterprises.

Milk recording constitutes the ideal management system for the dairy enterprise. It even compares very favourably to those that are used by other enterprises as management systems working in very diverse

fields who have decided to adopt them to ensure efficiency, yield, and profit. The advantages that derive from milk recording programs are, indeed, numerous and milk producers should consider the results obtained by their use as an essential source of reference on which to base the decisions regarding the management of the herd.

As an example, let's see what happens in the case of a hockey team as far as the personnel evaluation is concerned. Let's point out first that the coaches and the managers not only know the average number of goals allowed by their goalies in facing each of the other teams but they also have on hand statistics on each of the players of the team: regarding their defensive performances, the number of goals scored and assists provided, the time spent in the penalty box, the number of checks given, and the number of shots fired at the opposing goal during a game. Some even have systems of plus or minus to evaluate the efficiency of their players. It is, indeed, from these data that the decisions concerning the game plan for the next game are taken.

This decision-making method is not unique to hockey. One can find it, as well, in other sports, namely baseball where the sports commen-

tators often use the expression "play the book" to mean that the manager of a team bases one or another decision during a game on statistics.

Therefore, why shouldn't dairy producers act in the same way when they have to evaluate each cow in the herd in order to know its strong points and its weaknesses? Is not their purpose, as enterprise owners, to look constantly for the best qualities of each of the cows in the herd. In Quebec the size of the herd registered in a milk recording program is about 40 cows, and the income from the sale of milk on these farms is of the order of \$65,000 to \$70,000 a year. They are, therefore, important enterprises which require a management system which must be efficient if the producer wants to be able to "play the book".

We can study the behaviour of 4,717 herds registered in DHAS having different levels of production per cow for an identical production quota of 150,000 litres of milk per year (see Table 1).

Definition of Columns

A) Average number of cows kept to produce the volume of 150,000 litres of milk.

Table 1. Behaviour of 4,717 DHAS herds with different levels of production per cow but having an identical quota (150,000 litres of milk or 5,250 kg of butter fat, 1980)

No. of herds	No. of Cows	Average Production (kg)	Milk per Cow (kg)	Feed Cost per Herd (\$)	Gross Income per Cow (\$)	Income-Feed per Cow (\$)	Income-Feed per Herd (\$)
	A	B	C	D	E	F	G
28	37.2	4035	1217	19,567	1,154	628	23,362
27	31.5	4767	1457	18,491	1,364	777	24,476
39	28.6	5250	1691	18,275	1,502	863	24,682
14	26.2	5721	1852	17,685	1,638	963	25,231
10	24.2	6210	2062	17,472	1,777	1,055	25,531
39	22.5	6678	2224	17,123	1,911	1,150	25,875

B) Average annual production of the herd: quantity of milk produced per cow during one year.

C) Total quantity of meal given per cow per year, including the dry period.

D) The cost of feed for the herd includes:

- the cost of forages:
 - hay: \$60 to \$70 per metric tonne;
 - corn silage: \$15 to \$27 per metric tonne;
 - hay silage: \$25 to \$37 a tonne;
 - pasture: \$70 per tonne hay equivalent.
- the cost of meal:
 - manufacturer's price.

E) The gross income per cow is the quantity of milk produced per cow multiplied by the net price of milk (including subsidies and deductions for export, transport, publicity, marketing board, etc.) For the purpose of the Table, we have considered an average of \$28.67 per hectolitre for 1980.

F) Milk income less cost of feed per cow is the total income resulting from the sale of milk less the total cost of feed for the herd divided by the number of cows present in the barn.

G) The milk income less the cost of feed for the herd is column F multiplied by the number of cows in the herd.

The Analysis of the Table Demonstrates:

— That for an identical volume of production, certain producers must keep 37.2 cows while others need only 22.5 cows (column A).

— In 22-cow herds, even if meal consumption per cow is greater, the total cost for the herd is lower, namely, \$2,444 less than that of the 37-cow herd. This can be explained by the fact that the needs for forage are not proportional to the milk production per cow but, on the other hand, the number of cows influence directly the needs in forage and in meal (columns C and D).

— For the same volume of production (150,000 litres of milk per year), the producers having a 22.5-cow

herd (whose average production is 6,678 kg per cow) had a greater income than those with 37 cows with an average production of 4,035 kg per cow (column G: \$25,875 compared to \$23,362).

From an economic standpoint and within the limits of the available genetic potential of the herd, it is always (or almost) more interesting to produce more with the same number of cows, or with fewer cows, thanks to herd management which permits each cow to produce according to its potential. In this perspective milk recording shows itself to be an important management tool for the producer, since it gives information on the production of each cow, the composition of the milk in butter fat and proteins, and the stage of lactation of each of them which permits the producer to identify the boarders and to feed each of the cows rationally.

Why Have a Milk Recording Program?

The producer has a program in order to operate his enterprise as a businessman, namely, with methodology and efficiency, with figures to support his aims and, therefore, to obtain better profits. The cows will not give more milk simply because they are controlled any more than will the farmer be any more efficient because he is registered in the milk recording program. The producer who follows a milk recording program can, however, hope for greater benefits since he has more information on hand on which to base his management decisions. Another important factor in milk recording is the regularity with which the reports are published thus permitting the producer to follow daily each cow in the herd.

BEES HAVING GENETIC POTENTIAL IMPROVED BY INSEMINATION

Everyone knows that artificial insemination helps in improving the breeds and the yield of many animal species. Who would ever think that this is now the case with queen bees? Research in this direction has shown encouraging results.

In nature, breeding, carried out in the air at heights of between 15 and 40 metres, does not permit predicting the genetic contribution of the drone to the progeny. Artificial insemination comes to our rescue by fixing the desired hereditary characteristics otherwise determined by pure luck.

Procedure

Only the largest queens are chosen for insemination, which is carried out when they reach their stage of sexual maturity, namely the fifth day of their life. With some 250 workers they are placed in a damp room where the temperature is maintained at 34°C. The large number of workers is necessary to recreate the favourable conditions for good fertilization.

The males selected for this operation must be at least 15 days old. Three or four are needed in order to collect the required quantity of sperm, since some of them could prove to be sterile. The chosen can only fly inside the screened cages whose outlets are made up of queen excluders. These excluders permit the workers to go into the fields but keep in the drones. This is required in order to ensure their source and to control their genetic contribution.

The sperm is collected as follows: First, the males are caught by the wings. The thorax is slightly compressed in order to facilitate the exit and inversion of the penis as well as the release of the sperm which is present close to the orifice.

The insemination of the queen bee is carried out in an operating room where it is anesthetized with carbon dioxide. But watch for movements which are still possible! The injection of the sperm in the vaginal opening must be carried out when the bee is totally immobilized. A lesion in the vagina during the operation prevents laying and can even cause death.

In order to ensure a good insemination, the spermatheca of the queen must be well filled. This objective is reached with two injections of four thousands of a millilitre of sperm, the second injection being carried out 24 hours after the first.

(Continued on Page 20)

LIST OF AGRICULTURAL FAIRS IN QUEBEC IN 1982

Class	Agricultural Society	Location	Date	Secretary	Telephone
County					
A	Abitibi	Amos	19-22 Aug.	Mrs. Gertrude Darveau, Ste. Gertrude, JOY 2L0	732-2557
A	Argenteuil	Lachute	17-20 June	Mrs. Edna Hadley, Box 402, Lachute, J8H 3X2	562-2903
A	Brome	Brome	04-06 Sept.	Ronald Frizzle, Box 88, Brome, JOE 1K0	243-5203
A	Chicoutimi	Chicoutimi	07-13 June	Louis Boucher, Box 622, Chicoutimi, G7H 5B1	545-8597
B	Compton	Cookshire	29-01 July	Mrs. Nicole Couture, R.R. 1, Compton, JOB 1L0	835-9208
B	Huntingdon, div. "A"	Huntingdon	05-08 Aug.	Mrs. Elizabeth McNaughton, Dewittville, JOS 1C0	264-2400
A	Kamouraska	St. Pascal	10-15 Aug.	Jacques Bérubé, Rte. 230 West, St. Pascal, GOL 3Y0	492-2694
A	Lotbinière	St. Agapit	10-15 Aug.	Raynald Champagne, St. Sylvestre, G0S 3G0	596-2688
B	Missisquoi	Bedford	04-08 Aug.	Bernard Saint-Onge, 4 boul. Lévesque, Bedford, JOJ 1A0	248-2783
B	Papineau	Papineauville	28-01 July	Mrs. Julie Deschambault, Box 404, Thurso, JOX 3B0	985-2337
B	Portneuf	Deschambault	21-25 July	Luc-A. Forcier, 107 Principale St., Yamaska, JOG 1W0	285-2567
A	Richelieu	Sorel	09-13 June	Brian Lodge, R.R. 3, Danville, JOA 1A0	742-0448
B	Richmond	Richmond	09-12 Sept.	Mrs. Thérèse Malenfant, Isle-Verte, G0L 1K0	839-3042
B	Rivière-du-Loup	Isle-Verte	20-25 July	Mrs. Marielle Guertin, Box 190, Rougemont, J0L 1M0	898-2602
B	Rouville	Rougemont	08-11 July	Mrs. Claire Menard, 947 Saint-Férol St., Les Cèdres, J0P 1L0	469-3790
B	Soulanges	Côteau-du-Lac	03-06 Sept.	Turner Hunter, R.R. 6, Coaticook, J1A 2S5	452-4522
B	Stanstead	Ayer's Cliff	26-29 Aug.	Mrs. Monique Pigeon, 447, rang de la Beauce, Calixa-Lavallée, J0L 1A0	849-3921
B	Verchères	Calixa-Lavallée	16-18 July		583-6470
District					
A	Arthabaska	Victoriaville	09-15 Aug.	Gérard Drouin, Parc de l'exposition, Victoriaville G6P 4K1	752-2101
A	Drummond	Drummondville	15-20 June	Germain Lefebvre, 69, Pays Brûlé, Baieville, Yamaska, JOG 1A0	783-6620
A	Joliette	Berthierville	21-25 July	Mrs. Francine Sylvestre, Box 1228, Berthierville, J0K 1A0	836-2687
A	La Mauricie	St. Barnabé Nord	07-11 July	Mrs. Micheline Turcot, 430, Grande-Rivière, St. Barnabé Nord, GOX 2K0	264-5606
A	Mégantic	Thetford Mines	04-08 Aug.	Emile Hardoin, 1200 Lamonde St., Thetford Mines, G6G 4L1	335-6218
A	Montmagny	Montmagny	16-22 Aug.	Roland Gaumond, 12 Fournier Ave., Montmagny, G5V 2X7	248-3418
A	Pontiac	Shawville	03-06 Sept.	Everett McDowell, Box 449, Shawville, J0X 2Y0	647-3771
A	Rimouski	Rimouski	03-08 Aug.	Romuald St. Pierre, Box 486, R.R. 2, Rimouski, G5L 7B5	723-1666
A	St. Hyacinthe	St. Hyacinthe	23-01 July	Richard Robert, 740 Sacré-Coeur St., St. Hyacinthe, J2S 1V1	773-9307
Independent Fairs					
A	Ornstown	Ornstown	09-13 June	Harold L. McCaig, Box 239, Ornstown, JOS 1K0	829-2580
A	Expo-Quebec Provincial	Quebec	25-06 Aug.	Paul-Emile Maheux, Parc de l'exposition, 2205 avenue du Colisée, Québec, G1L 4W7	694-7110
	Royal Agricultural Winter Fair	Toronto	Nov.	John A. Wiley, Toronto Coliseum, Toronto, M6K 3C3	366-9051
A	Sherbrooke	Sherbrooke	13-22 Aug.	Miss Eileen Morgan, 400 Parc St., Sherbrooke, J1E 2J9	563-5651
A	Agricultural & Commercial Fair of Lac Saint-Jean Inc.	Saint-Félicien	17-22 Aug.	Simon Bergeron, 1235, rang 3, Saint-Prime, G0W 2W0	251-3207
A	Agricultural Fair of Saint-Honoré de Beauce Inc.	Saint-Honoré	Aug.	Eugène Fortin, Saint-Honoré-de-Shenley, Beauce, G0M 1Y0	485-6564
	Agricultural Fair of Saint-Sébastien Inc.	Saint-Sébastien	Aug.	Clément Dion, Saint-Sébastien, Mégantic-Compton, G0Y 1M0	652-2727
A	Trois-Rivières	Trois-Rivières	30-08 July	Jean Alarie, Box 968, Trois-Rivières, G9A 5K2	374-2714
A	International Salon of Food & Agriculture	Montreal	01-07 Nov.	Exposition Agricole Inc. Box 277, Cartierville, H4K 2J6	335-0030
	Provincial Plowing Match	La Pocatière	09-11 Sept.	Martin van Lierop, Macdonald College, Box 284, H9X 1C0	457-2000

Flag Tour Tea

A delightful afternoon was spent in January at the apartment of Sally Summerton in the Howick Housing Development. Members of **Aubrey-Riverfield** met with several invited guests for a social afternoon, followed by tea. We numbered about 20 and the weatherman, who had been cruel at times, favoured us with a beautiful clear, crisp day.

The purpose of the gathering was to raise a little money! Each member brought a small contribution towards the tea — half a sweet bread, a dozen or so cookies, part of a pan of squares — and when the plates were arranged there was a wonderful selection of food.

Our County President, Mrs. Hazel Robertson, brought the ACWW Flag which graced the centre of the tea table. Almost every member brought hand work with her, so there we were tatting, crocheting, knitting, doing hairpin work. Such busy ladies! A few of the women were being helped with new skills.

After a period of work and chat, Mrs. Robertson explained the purpose of the gathering and thanked Sally Summerton for her kind hospitality. She and her daughter, Joan, and a few helpers served tea, coffee, and goodies. The collection dish was passed around, and we found we had made \$41 for the Flag Tour. Everyone agreed it was an enjoyable way to do it.

A 45th Anniversary Celebration

On April 1 members of Spooner Pond WI and their guests met in the hall of St. Andrew's Church in Upper Melbourne to celebrate the 45th anniversary of the founding of this branch. After welcoming invited guests and her fellow members, the President, Mrs. Florence Ignatieff,

opened the meeting. The Roll Call was: "Tell when you joined the WI and what offices you have held"; this was answered by 20 members.

Mrs. Joyce Gilchrist, the Provincial Education Convener, was introduced by Mrs. Stella Parkes and presented with a corsage. Mrs. Joyce Lancaster introduced Mrs. Shirley Johnson, County President, and presented her with a corsage,



At Spooner Pond's 45th Anniversary, left to right, County President Mrs. S. Johnston, Charter Member Mrs. B. Rodgers, President Mrs. V. Ignatieff, and Provincial Convener of Education Mrs. J. Gilchrist.

and one was pinned on Mrs. Beatrice Rogers, the only one of the three charter members who was present, by Mrs. Grace Taylor. The president introduced the other guests: Mrs. Doris Stevens from Cleveland who is also 2nd Vice President on the County Executive, Mrs. Connie Vaitekunas, County Treasurer, our own Mrs. Grace Taylor who is County 1st Vice President, Mrs. Aline Healy, Cleveland, Mrs. Peggy Provis, Denison Mills, Mrs. Winnifred Griffith, Gore, Mrs. Armatage, Melbourne Ridge, Mrs. Janet Banfill, Richmond Young Women, Mrs. Rita Olney, Shipton.

The regular business meeting was held, and then Mrs. Biggs took over for the entertainment committee. She called on Mrs. Gilchrist, who gave a very interesting talk on the Collect and explained its clauses and its good common sense. She was thanked and presented with a small gift by Mrs. Marjory Armstrong. Mrs. Dorothy Oakley read the minutes of the first meeting

which had been held in March 1937. The history of the branch was also read.

Twenty-five year pins were presented to Mrs. Verna Vigneault by her sister, Mrs. Alice Brock, to Mrs. Fleck by Mrs. Biggs, and a pin was to be presented to Mrs. Daisy Coddington at the Wales Home, while Mrs. Laurie Walker was to receive her pin at the next meeting.

Mrs. Biggs led a contest on the branch history which had just been read and, among the guests, the winner was Mrs. Armatage, while Mrs. Rodgers was the winner among the members. Each received a small prize. Another contest was held in which each person received a numbered slip of paper and when her number was called she had to perform whatever her slip of paper requested. This was very amusing and caused a great deal of laughter.

The refreshment committee under the leadership of Mrs. Florence Blanchard, Mrs. Fran Pope, and Mrs. Grace Taylor called everyone to the tables which looked very inviting. All agreed that a very enjoyable afternoon had been spent.

Two Special Occasions

The festive air of Christmas was evident when the members of the **Howick WI** met in the church hall

their December meeting. A delicious luncheon was served by the Chateaugay River group. The Christmas story was read by the 1st Vice-President, Mrs. Una MacRae. It was introduced as a could-have-been story entitled "The Three Wise Women of the East."

Another special feature of our meeting was the presentation of two memberships. Mrs. Bruce Chisholm received her pin and certificate from Mrs. Haddon Kerr and Mrs. Arthur Kerr. Mrs. Kenneth McRae was presented with her pin and certificate by Mrs. Leslie Wright and Mrs. Bruce Ness. Both women have been members of the group many years and have contributed their time and talents to numerous activities and projects and worked on committees and in office.

The President, Mrs. Melville Brown, had a delightful surprise at the end of the meeting. Under a decorated miniature tree, sparkling with twinkling lights, nestled a variety of wrapped parcels. Each member was asked to take one as she prepared to leave, and we discovered each contained a gift of home-baking and a message for a Merry Christmas.

On another occasion, to celebrate the anniversary of the first meeting of the WI in Stoney Creek, Ontario, in 1897, Howick ladies held a successful coffee party in the United Church Hall. Each member invited a neighbour or friend to drop in and ladies of the community were invited through church bulletin notices. Tea and coffee were served and a delicious variety of homemade muffins.

On a three-person committee, Leslie MacRae, Janet Elliot, and Thyra MacRae, had assembled attractive and informative displays. One was a "policy" which contained a "memory" scrapbook, a large poster showing activities and projects, the newly published "Pioneer Women", and other applications. A second table held all kinds of knitted articles made by members to be forwarded to Canada. A third table held beautiful quilt articles made by members during the past year.

For the public who attended had an excellent opportunity to browse before



Life Memberships were presented to Howick members Mrs. Kenneth McRae and Mrs. Bruce Chisholm.

and after they participated in the refreshments and gained some idea of the work and activities of the organization.

The table of home baking was very popular and an end result of the day was a satisfactory sum of money as well as a time to visit with others. It seemed a very worthwhile and fitting way to publicize and celebrate WI week.

Dear WI Members,

As I write this the Annual Convention at Macdonald is just around the corner and so many things should be done in the coming weeks! First I want to say "thank you" for your punctually mailed in reports. I hope to meet many of you at the Convention. Some weeks ago Mrs. Edith Watt, the Publicity Convener of Bonaventure County, visited me for a short while during her stay in nearby Ormstown and, after an interesting conversation, the whole area of this remote county came alive for me. This will be my last report as Provincial Convener, and I feel that we really worked well together, and I thank you again for your work and the many friendly letters I received from you. It was, for me, three years of learning, I won numerous friends and in the coming years I will often remember this beautiful time.

At **Pioneer** there was a discussion concerning the proposed changes in the Quebec educational system and suggestions were made that a petition be sent out.

At **Upper Lachute East End**, Mrs. McBeth displayed the pillow shams she quilted to match the quilt made by some other members.

They subscribed again to the large print Reader's Digest for their members living at the Residence and a donation was made to the Junior Division of the Agricultural Society for prizes at the Spring Fair. Argenteuil County President, Mrs. B. McGibbon who was their guest at the meeting, presented a 50-year pin to Mrs. Helen Smith and a 25-year pin to Mrs. Violet Berry. Guest speaker at the same event was Richard Paulson. He spoke on cuttings and bulbs and gave a lot of tips on houseplants.

Lakefield ladies were working hard making articles for their summer sale on July 17. Their second afghan for CanSave is also nearly finished. A silver collection was taken for the flag project.

At **Arundel's** meeting it was decided that the quilt blocks which members had appliqued over the winter should be put on frames and now finished. A report on the recent Board meeting followed at which a suggestion was made that a Summer Picnic of all County Branches would be an interesting experience and the Arundel Tree Farm was suggested as an appropriate meeting place. Following the close of the business meeting the program was highly entertaining. Everyone, as names were pulled from a hat, in turn pulled from another hat a subject on which she spoke for 30 seconds. Topics ranged from "What the W.I. has done for me" to "How I met my husband" and "Cooking for Two".

Brownsburg branch had as guests at their meeting Mrs. Bert McGibbon, County President, and Mrs. Ethel McGibbon, representing the Argenteuil Historical Society.

Dalesville-Louisa's motto was: "Instead of finding faults, find a remedy!"

Jerusalem-Bethany's guest speaker, Mrs. Heather Gordon, gave a very informative talk on Heart Disease and answered many questions from the group.

Frontier members heard Mr. Duncan McKiddie tell of the aims of Alliance Quebec. A demonstration on ceramics was given by Mr. and Mrs. Keith McCaig and lovely articles were on display. Ingenuity

and talent were in evidence as humorous posters made by the members were judged. These were placed in various locations to advertise the "Mother's Day Tea and Bazaar" at St. Mungo's Church Hall. First prize went to Hazel Swail.

West Island news forwarded to the Provincial level this year is different from other years: the branch enjoyed February 20 at the Macdonald Farm Centre where they served home made hot chili con carne, rolls, cake and cookies with coffee or tea to the judges and students taking part in the Livestock Show at the Annual Royal Winter Fair. Only six members and one husband were able to be there, but those who could not go, baked or made chili and sent it. A good day was enjoyed by all, especially the students.

Grand Cascapedia welcomed two new members. All members contributed to a grocery box, which was raffled and won by Helen Gilker. The branch held their Annual WI Banquet on April 19, and made plans to host the Annual County Convention.

Marcil presented a member who has been ill with a plant. They heard a detailed report from the special committee appointed to attend meetings of the Port Daniel West Municipal Council regarding the condition of the Fire Truck and the training of the volunteer firemen. They sponsored a Student Project which will give employment to five students. The report of the Canadian Transport Commission in the matter of the applications of the C.N.R. in respect of its Gaspé and Campbellton Servocentres has been received. It appears that the efforts of the branch on behalf of the local C.N.R. stations and station masters were very worth-while. They presented Mrs. Cameron E. Dow, O.B.E., with a gift on the occasion of her 96th birthday. They also welcomed two new members.

Port Daniel's Mrs. Eva Sweetman had the honour of presenting four members with 25-year pins: Mrs. Dorothy Jones, Mrs. Anna Sweetman, Mrs. Marie Louise Langlois, and Mrs. Eunice Dow.

Restigouche ladies entertained

members of the Matapedia WI at brunch. They gave a donation to the Butter's Foundation, discussed Institute Week, appointed an auditor, and held a social evening.

Black Cape presented a bursary of \$200 to a student graduating from the English section of the Bonaventure Polyvalente School who was continuing on in College. They updated their branch history and adopted a new foster child when word was received that the previous one no longer needed assistance. They held a social evening at a member's home and the proceeds were added to a Community Educational Fund for a local handicapped girl.

Sheila Needham, the **Brome** County Publicity Convener, sent in the following letter:

"Dear Mrs. von Brentani:
"I would like to mention that following a discussion at the County Annual Convention in South Bolton, the Branches realized how lucky we are here in the Eastern Township to have an English paper the *Sherbrooke Record*, which, without fail, publishes all our meetings and special events. In view of this fact most branches not only in this county but others as well have sent in thank-you letters and poems to the Editors and these also were published to our delight."

Sutton's Publicity Convener, Mrs. Ruby Knights, told about her trip to the gateway of the Arctic, she rode the Polar Bear Express which is a special tourist train to Moosonee, Ontario. Mrs. Knights also had a boat ride to Moose Factory Island and told about the beginnings of the Hudson Bay Post there in James Bay. Citizenship Convener, Mrs. Esther Cleland, gave a short history on the hardships and accomplishments of the pioneer settlers, especially those homesteading from 1847 to 1862 on the east side of Lake Memphremagog — a rocky mountainous region in contrast to the more level fertile land on the west side of the Lake. The branch had as guest speaker, Mr. Robert Quilliams who is Vice-president of Sutton Art. This is an important project in the Eastern Townships with 280 members. The Centre gives local artists a chance to display and sell their work.

Austin made 300 rolls for a Scout Jamboree. A donation was given to the special Olympics. Home Economic Convener, Mrs. M. Hall, recommended using herbs in cooking to replace so much salt. A young student, who received a Bursary from Austin Branch made the "Dean's List" at Champlain Regional College.

Abercorn have a plaque in memory of a dear member, Mrs. Edna Garland. As last year was the year of the Handicapped, Thelma Riddell was made a honorary member. Unable to hear and speak, this lady helps at all the meetings by sending cards, picking up the collections, and organizing their chance game. This branch held a successful yard sale and plan to have another. At the home of Mrs. Marg. Edwards the branch was given a complete talk and demonstration on pottery. Mrs. Edwards did a lot of thoughtful planning to show the ladies the entire process. She had dishes that have been fired once, some in the drying stage, and then she made two pots on the wheel. The onlookers were thrilled to see how a lump of clay becomes a piece of art.

South Bolton's Education Convener, Mrs. Needham, had the members write the word "Education" in a perpendicular line on a paper and starting from 'E' write a word for each of the following letters and try to end up with a sentence which make sense. Try it! It's not easy, but lots of fun!

Dewittville had as guest speaker a hostess from "Good Host Food Ltd.", Rexdale, Ont. She gave samples of teas and other hot drinks showing the different tastes.

Ormstown had a Valentine exchange attended by 38 members!

At Hemmingford's March meeting everybody had to name an Irish song. They also catered for the Senior Citizen lunch and served 53 people.

Franklin Centre started on crocheting granny squares. Each member got a hook and floss. For some it was the first time.

Friends of a deceased member of **Huntingdon** gave, as a remembrance, some money to the Little

en Library to buy a book on
dening for the use of all in-
sted Huntingdoners.

Uglastron gave in its meetings
on house plants, diets, ex-
anges of magazines and World
II songs. Donations were given
schools and to UNICEF, also to
families whose houses burnt; a
scription to the Catholic Digest
given to a life member. Tickets
e sold on a doll. A rose was
en to the oldest member of the
nch.

eteen members answered the
call at **York** by paying one cent
each inch of waistline. A suc-
ful rummage, food, and mystery
cel sale was held. To earn extra
ney, each member made a small
h sock, about three to four
es high, to keep at home. Each
th the members put money into
r special holidays, for example:
cent for New Year's, 14 cents
Valentine's Day, etc. Also each
nber donates for her birthday or
anniversary. Last year they
ed \$62.05.

Chatham held a penny sale of
all articles which were brought in
members. It is a pleasure to
e three new young members.
motto in particular was men-
ed: "Love one another and visit
sick". One of their members,
Richard Miller is very
arkable. She spends a great
of her time visiting the old and
shut-ins; she also takes gifts to
Sanatorium, and she never
ets the birthdays of the over 80s
e community.

Dochville sent flowers and a
well card to Mrs. Evelyn Davis
was in hospital in Montreal.
p was donated and served by
members to the Catholic Church
help the poor in other countries.
e members helped families in
to do house cleaning. A Terry
Day was held and \$548.25 was
ed. Three new members joined,
of the members who left the
munity were presented with
a cups. They had an exchange
itting and crochet patterns
ween members, and some ladies
more sewing for the hospital. A
charm was given to Mrs. Iris
er, who has been treasurer in
Dochville W.I. since 1963 when
branch was founded.

Wright's mottoes were: 1. "Two
things are hard on your heart: Run-
ning up stairs and running down
people"; 2. Take time to stand and
stare at the wonders everywhere!"
— Several members attended a
garden party at the Gatineau
Memorial Hospital at Wakefield.
Sandwiches, doughnuts and coffee
were sold one day during the week
of the Gracefield Western Pioneer
Festival. Also a book sale and
handiwork tables proved profitable.



Kinnear's Mills WI members enjoyed a very
special Founder's Day.

Six of **Kinnear's Mills** members
were awarded a cup and saucer for
perfect attendance over the year.
Helen Jamieson gave a demonstra-
tion on how to make flowers from
material. A special guest, Collette
Gigleux gave a talk on the correct
growth of house plants and on out-
door gardening. They donated a
QWI book to the High School in
Thetford. On February 19, 1982, all
the members with husbands and
children gathered at the Allen home
for a sleigh ride to celebrate
Founder's Day. The evening was
perfect, the weather was on their
side. After an hour of riding, they
got into their cars and went to the
village's counsel room where there
was skating for the children and
young at heart, others played cards
inside or just looked around. When
everyone was cold and tired, they
were served a delicious lunch of
sandwiches, doughnuts, coffee or
tea. Jan Lowry made an anniver-
sary cake, which everyone enjoyed.
All went home tired and it was
decided that they would not wait for
another 85th anniversary but make
it a yearly event to celebrate.

Inverness purchased a QWI
pioneer book and placed it in St.
Patrick's Elementary School. A new
member joined in the new year.
Founder's Day was celebrated with
a card party.

Fort Coulonge members have
worked at the "Manoir", Campbells
Bay, where they have been short of
kitchen help — preparing
vegetables, etc. and visiting the
residents while there. One of their
members has been very active with
the Parent Committee of the local
high school and has kept the
branch informed at this difficult time
in the Education crisis. The Provin-
cial President, Mrs. Ina Kilgour, was
also a welcome guest and spoke on
the WI work at Provincial level and
the need for the cooperation of
everyone to make the ACWW Con-
ference in Vancouver a success.
We are all members of ACWW and
must appreciate the great honour of
Canada having been chosen for this
conference, when we will be hosting
people from all over the world.
Slides of local interest as well as
Edinburgh and northern Scotland
were shown, by the President, Mrs.
G.E. Colton. She had taken a
number of QWI spoons with her on
her trip to leave as souvenirs with
several WI members she met.

Shipton held their Annual School
Fair named the "Spring Fling",
which was a refreshing break in
March and enjoyed by all. A plant
and food sale was held in April.

Denison Mills is a very busy small
branch. Two new members were
welcomed. A luncheon was served
by members at the Richmond Coun-
ty Annual meeting.

Richmond Hill. A monthly auction
is held here and donations were
made to several worthy causes.
Two quilts were sold. This branch
has a "silent-member" Mrs.
Solomon, who was 90 year old in
March; she was remembered by a
sunshine box. Mrs. Solomon sends
a donation each month but wishes
to be a "silent-member".

Members of **Melbourne Ridge** at-
tended a C.L.S.C. meeting in Rich-
mond. A contest on the amount of
money collected for coins of friend-
ship in eight months was won by
Leona Crack. Members won Parker
Pens for perfect attendance. They
were: M. Smith, J. Morrison, N.
Williams, L. Crack and S. Johnston.
The highlight of the meeting was a
poem dedicated to the late Marion
Kerr by Jennie Beers of the Wales
Home.

Cleveland's motto: "It is come, it is here, the Longest Meeting of the Year!" The annual meeting of course; five members were given cups and saucers for perfect attendance: D. Sloane, A. Healey, D. Stevens, M. Banhill and P. Healey.

Waterloo-Warden's roll call: name something that has helped the world in our generation, was answered with: radio, television, computers, photography by satellite, advanced methods of travel, solar heat projects, medicare benefits, etc. A donation was voted to the Heart Fund Campaign and gifts were handed out to six members for having had perfect attendance for the past year's meetings.

Granby West welcomed two new members. This branch celebrated its 30th anniversary — as FWIC celebrated its 85th and QWI its 71st. Mrs. A. Pow hosted the anniversary luncheon, assisted by Mrs. K. McElravy and Mrs. M. Crossfield. At each member's place setting was a hand crocheted cross bookmark in gold and blue as a memento of the occasion. Two articles were read from the "Sherbrooke Record", concerning the WI's 85th anniversary. Plans were made to host the Shefford County Annual meeting. The Agriculture Convener gave many hints on care of plants: (1) Cover a plant in plastic with an apple inside, leave four or five days to make a plant bloom. (2) Wrap a cactus in a newspaper while transplanting. Education Convener mentioned that gelatin is good for plants, dissolve 1 package of gelatin in 1 cup hot tap water, stir well and add 2 cups of cold water and give it to the plants.

Granby Hill's Education Convener discussed with the members the poor prospects with the new education system. The Home Economic Convener gave hints (1) to place fresh cut peaches into a mixture of 1/2 milk and 1/2 water to keep them from discoloring until ready for use. (2) Let rhubarb stand in boiling water for five minutes — drain — put in fresh water and cook until tender. It will require less sugar. Each member gave a penny for each year of her age, these were collected by the treasurer to be given in at the County meeting to go towards the ACWW Flag Tour.

Five members of **Belvidere** had perfect attendance for the year. They will be presented with Adelaide Hoodless or QWI spoons. The branch entertained the members of **Ayer's Cliff WI** at their regular meeting. Mr. and Mrs. Kenneth Herring showed slides of their trip to Ireland.

Milby's motto: "Bring sunshine into the lives of others and you cannot keep it from yourself". Mrs. E. Marlin, County President, was a guest. Three members had perfect attendance. A quilt to be sold was displayed as well as two other articles."

Brompton Road Welfare and Health Convener told the members they sold 124 bunches of daffodils with the proceeds going to the Cancer Society. Items for recycling were brought in. Compliments were extended to the **Ascot** branch for entertaining the members on Founder's Day. — An interesting program followed the meeting. Each member had brought an antique and gave its history.

Ascot: The annual meeting in which reports were read was held at the home of Mrs. Savage. Tea and coffee were served as well as a lovely birthday cake, made by Mrs. Harold Robertson in honour of all those having birthday in March. The Reader's Digest in large print was reordered. The program was in charge of the Welfare and Health Convener who introduced Mrs. Jean Cruickshank who gave an interesting talk on the psychiatric unit of the Sherbrooke Hospital.

Lennoxville's motto: "Coming together is a beginning, keeping together is progress, working together is success". Mrs. Elwood Marlin, County President, presided for the election of officers. In her address, the President, Mrs. Parker, urged the members to uphold the ideals outlined by the Founder, Adelaide Hoodless. Mrs. Eldora Turner was welcomed as a member by transfer. The program on Home Economics was in charge of the convener, Mrs. Hugh Wallace; she held a pot holder competition. The items were hand-made and hand-quilted. Mrs. Gerald Knutson acted as judge; the winners were: Mrs. Eldora Turner; Miss Kathleen Atto, and Mrs. Ivan Kerr. Another feature of the program was a craft display which included hand embroidered and needlepoint pictures, crocheting, knitting, weaving, huck weaving, patchwork, wrapped wool and macramé necklaces. To complete the program all members and one guest gave a one minute talk on her favourite hobby.

Ruth von Brentani
QWI Publicity Convener

(Continued from Page 14)

Results

The inseminated queens have a life span which is slightly lower than queens which have mated naturally. On the other hand, since they are controlled, the performance from the point of view of egg laying and quality of the bees obtained can only be better.

The first results of a comparative study between queens which have mated naturally and queens which

have been inseminated show that the egg laying of the latter as well as the honey production is 20 per cent lower. Secondary effects of the insemination of these queens could be the cause. Methods have been improved and the results observed depend directly on the genetic quality of the queens and the drones.

A few trials here — Quebec has three commercial queen breeders. Artificial insemination is, on the other hand, an experiment tried in many places. It is notably the case

at the Research Station in Deschambault where queen bee artificial insemination is carried out on a reduced scale. Starting this year, this method will be used in a more intensive way by the Division of Apiculture and Maple Syrup Production of the Quebec Ministry of Agriculture, Fisheries, and Food. We want to improve by this technique the two lines of the Italian breed which have been previously selected at Deschambault and St-Hyacinthe. The intention is to offer this service to commercial breeders who show an interest.

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NATIONAL CONSULTATION

The Official Language Minority Groups Directorate of the Department of the Secretary of State is responsible for the programme dealing with the growth and development of official language minority communities.

As we prepare to renew this mandate at the end of the current year, we invite you to submit written comments, opinions and recommendations concerning the Official Language Minority Groups program. We are particularly interested in the three following themes:

- Community use of the Programme;
- The current state of the community;
- The needs and aspirations of the Community.

Letters should be received no later than June 30, 1982 at one of the following addresses.

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